

## CLAIMS

I claim:

1. A device for laying out a bowling ball, said device comprising:  
a base portion having a center adapted to substantially rest on a curved  
5 surface of a bowling ball, the perimeter of said base portion including degree  
indicators; and  
at least four arms adapted to substantially rest on the curved surface of  
a bowling ball, said arms including length measurement indicators, said angle  
indicator arms connected with and extending from said base portion;  
10 wherein at least two of said angle indicator arms are adapted to rotate  
about the center of said curved base portion.
2. The device in claim 1, wherein:  
at least two of said arms are formed integrally with said base portion.
3. The device in claim 1, wherein:  
15 said plurality of arms extend more than halfway down the  
circumference of the bowling ball.
4. The device in claim 1, wherein:  
each of said arms is constructed of a flexible material.
5. The device in claim 1, wherein:  
20 an edge of each of said at least four indicator arms is aligned with the  
center of said base portion.
6. The device in claim 1, wherein:  
said base portion has a partially spherical shape.
7. The device in claim 1, wherein:  
25 at least two of said arms extend in opposite directions from the center.
8. A device for laying out a bowling ball, said device comprising:  
a curved base portion adapted to substantially rest on a curved surface  
of a bowling ball, said base portion defined by a solid perimeter portion

including degree indicators, a substantially open middle portion, and a center portion, including a center aperture joined with said perimeter portion; and

at least four curved angle indicator arms adapted to substantially rest on a curved surface of a bowling ball, said angle indicator arms including length measurement indicators, said angle indicator arms connected with and  
5 extending from said center portion of said curved base portion;

wherein at least two of said angle indicator arms are adapted to rotate about said center aperture of said center portion.

9. The device in claim 8, wherein:

10 at least two of said arms are integral to said base portion

10. The device in claim 8, wherein:

said plurality of arms extend more than halfway down the circumference of the bowling ball.

11. The device in claim 8, wherein:

15 said device further comprises a collar that attaches said at least two arms not integral to said base portion with said base portion.

12. The device in claim 8, wherein:

each of said arms is constructed of a flexible material.

13. The device in claim 8, wherein:

20 an edge of each of said at least four indicator arms is aligned with the center of said center aperture in said center portion.

14. The device in claim 8, wherein:

at least two of said arms extend in opposite directions from said center portion of said base portion.

25 15. A device for laying out a bowling ball, said device comprising:

a curved base portion adapted to substantially rest on a curved surface of a bowling ball, the perimeter of said base portion including degree indicators and the center of said base portion including a aperture; and

at least three curved angle indicator arms adapted to substantially rest on a curved surface of a bowling ball, said angle indicator arms including length measurement indicators, said angle indicator arms connected with and extending from said curved base portion;

5            wherein at least one of said angle indicator arms is adapted to rotate about the center of said curved base portion.

16.    The device in claim 15, wherein:  
         at least two of said arms are integral to said base portion.

17.    The device in claim 15, wherein:  
10       one of said arms is not integral to said base portion.

18.    The device in claim 15, wherein:  
         said device further comprises a collar that attaches said arm not integral to said base portion with said base portion.

19.    The device in claim 15, wherein:  
15       an edge of each of said at least three indicator arms is aligned with the center of said aperture in said base portion.

20.    The device in claim 15, wherein:  
         an edge of each of said at least three indicator arms is aligned with the center of said aperture in said base portion.

20    21.    The device in claim 15, wherein:  
         at least two of said arms extend in opposite directions from the center.

22.    A device for laying out a bowling ball, said device comprising:  
         a curved base portion adapted to substantially rest on a curved surface of a bowling ball, said base portion defined by a center portion including  
25    degree indicators and including a center aperture; and

         at least four curved angle indicator arms adapted to substantially rest on a curved surface of a bowling ball, said angle indicator arms including length measurement indicators, said angle indicator arms connected with and extending from said center portion of said curved base portion;

wherein at least two of said angle indicator arms are adapted to rotate about said center aperture of said center portion.

23. The device in claim 22, wherein:

at least two of said arms are integral to said base portion.

5 24. The device in claim 22, wherein:

at least two of said arms are not integral to said base portion.

25. The device in claim 22, wherein:

said device further comprises a collar that attaches said at least two arms not integral to said base portion with said base portion.

10 26. The device in claim 22, wherein:

an edge of each of said at least four indicator arms is aligned with the center of said center aperture in said center portion.

27. The device in claim 22, wherein:

15 an edge of each of said at least four indicator arms is aligned with the center of said center aperture in said center portion.

28. The device in claim 22, wherein:

at least two of said arms extend in opposite directions from said center portion of said base portion.

20 29. A method for measuring the thumb aperture angle on a drilled bowling ball, said method comprising the following steps

(a) providing a bowling ball having an exterior surface with finger apertures and a thumb aperture drilled therein;

(b) placing a user's thumb inside said thumb aperture;

25 (c) marking on said thumb aperture sides where the sides of said user's thumb touch said thumb aperture;

(d) placing a straight edge on said surface of said bowling ball from said first marked side of said thumb whole to said second marked side of said thumb aperture and extending said straight edge;

(e) drawing a line from said marked side of said thumb aperture closest to said finger apertures along said straight edge;

(f) placing a straight edge on said surface of said bowling ball from the center of said thumb aperture closest to said finger apertures through said the  
5 center of said surface between said finger apertures;

(g) drawing a line from the center of said thumb aperture closest to said finger apertures along said straight edge and through said the center of said surface between said finger apertures;

(h) measuring the angle defined by said lines in steps (e) and (g)  
10 above.

30. A method for marking the thumb aperture angle on an undrilled bowling ball, said method comprising the following steps

(a) providing a bowling ball having an exterior surface with the thumb aperture center and grip centerline marked thereon;

15 (b) rotating about said thumb aperture center a given thumb aperture angle degrees from said grip centerline;

(c) marking said surface of said bowling ball to indicate said given thumb aperture angle degrees from said grip centerline;

(d) placing a straight edge on said surface of said bowling ball from  
20 the center of said thumb aperture to said mark in step (c);

(e) drawing a line on said surface of said bowling ball from said center of said thumb aperture to said mark in step (c); and

(f) extending said line on said surface in the opposite direction than that drawn in step (e).

25 31. A method for locating the positive axis point of a drilled bowling ball, said method comprising the following steps:

(a) providing a bowling ball;

(b) rolling said ball down an oiled lane;

(c) marking a track defined by oil from said oiled lane on said bowling ball;

(d) placing said marked bowling ball on a surface such that the plane defined by said marked track is parallel to said surface and said marked track  
5 is as close to said surface as possible; and

(e) locating said positive axis point by finding a spot on the half of the ball farthest away from said surface that is equidistant to at least three points on said marked track.

32. A method for measuring a bowling bowl positive axis point vertical  
10 coordinate, said method comprising the following steps:

(a) providing a bowling ball including an exterior surface having the grip center, the centerline of the grip, and said positive axis point marked thereon;

(b) drawing a line perpendicular to said centerline on said bowling ball  
15 starting from the grip center and extending toward and beyond said positive axis point;

(c) drawing a line perpendicular to said line in step (b) starting at said positive axis point and extending to said line in step (b);

(d) marking the intersection of said lines from steps (b) and (c);

(e) measuring the distance of said line from step (c) starting from said  
20 positive axis point to said intersection in step (d).

33. The method in claim 32, wherein:

said vertical distance is negative if said line in step (c) extends toward the thumb aperture end of said grip.

25 34. The method in claim 32, wherein:

said vertical distance is positive if said line in step (c) extends toward the finger apertures end of said grip.

35. A method for measuring a bowling bowl positive axis point horizontal coordinate, said method comprising the following steps:

(a) providing a bowling ball including an exterior surface having the grip center, the centerline of the grip, and said positive axis point marked thereon;

5 (b) drawing a line perpendicular to said centerline on said bowling ball starting from the grip center and extending toward and beyond said positive axis point;

(c) drawing a line perpendicular to said line in step (b) starting at said positive axis point and extending to said line in step (b);

(d) marking the intersection of said lines from steps (b) and (c); and

10 (e) measuring the distance of said perpendicular line in step (b) starting at said intersection in step (d) to said grip center.

36. The method in claim 35, wherein:

said horizontal distance is measured to the right of said intersection in step (d) if the bowler bowls left handed.

15 37. The method in claim 35, wherein:

said horizontal distance is measured to the left of said intersection in step (d) if the bowler bowls right handed.

38. A method for measuring the block angle of a drilled bowling ball, said method comprising the following steps:

20 (a) providing a bowling ball including an exterior surface having the center of gravity, the pin, and the positive axis point marked thereon;

(b) drawing a line on said bowling ball surface from said pin to said center of gravity;

25 (c) drawing a line on said bowling ball surface from said pin to said positive axis point; and

(d) measuring the angle between said line in step (b) and said line in step (c).

39. A method for placing the positive axis point of an undrilled bowling ball, said method comprising the following steps:

(a) providing an undrilled bowling ball having an exterior surface with a pin and a center of gravity marked thereon;

(b) providing a block angle and a desired pin distance from the pin to the PAP;

5 (c) drawing a line on said surface from said pin to said center of gravity;

(d) rotating about said pin from said center of gravity a distance equal to the number of degrees in said block angle;

(e) marking said surface of said ball where said rotational distance in  
10 step (d) is equal to the number of degrees in said block angle;

(f) drawing a line on said ball from said mark in step (e) to said pin;

(g) measuring from said pin to a point along said line in step (f) that is a distance equal to said pin distance from said pin; and

(h) marking the location of said point in step (g) on said surface of  
15 said ball.

40. The method of claim 39, wherein said exterior surface includes a mass bias marked thereon and said mass bias is used in place of said center of gravity in steps (c) and (d).

41. A method of placing the positive axis point intersection point of an  
20 undrilled bowling ball, said method comprising the following steps:

(a) providing an undrilled bowling ball having an exterior surface with a center of gravity and said positive axis point marked thereon;

(b) providing a positive axis point vertical coordinate;

(c) locating a point on a distance equal to said vertical from said  
25 positive axis point;

(d) marking said point in step (c) as the positive axis point intersection point;

(e) drawing a line from said point in step (c) to said positive axis point; and



(f) drawing a line from said point in step (c) to an area of said ball that will become the grip center;

wherein said line in step (f) is perpendicular to said line in step (e).

42. A method of locating the center of a grip of an undrilled bowling ball, said method comprising the following steps:

(a) providing an undrilled bowling ball having an exterior surface with a center of gravity, a positive axis point intersection point, and said positive axis point marked thereon;

(b) providing a positive axis point horizontal coordinate;

10 (c) locating a point on said ball a distance equal to said horizontal from said intersection point; and

(d) marking said point in step (c) as the center of said grip.

43. A method for locating a grip centerline on an undrilled bowling ball, said method comprising the following steps:

15 (a) providing an undrilled bowling ball having an exterior surface with a center of a grip and a positive axis point intersection point marked thereon;

(b) drawing a line from said intersection point to said center of said grip; and

20 (c) drawing a line perpendicular to said line in step (b) and through said center of said grip.

44. A device for laying out a bowling ball, said device comprising:

a base portion having a center adapted to substantially rest on a curved outer surface of a bowling ball; and

25 at least one arm adapted to extend along the curved surface of the bowling ball, said arm connected with and extending from the base portion;

wherein said other arm is adapted to rotate about the center of said base portion.